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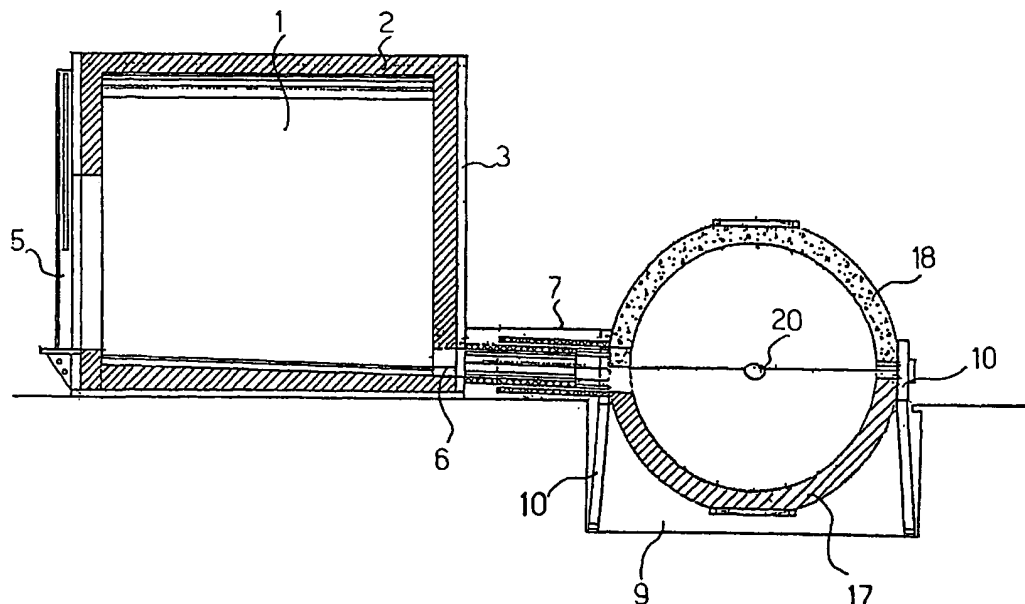
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(54) Title: MELTING FURNACE FOR METAL LEAGUES FIT TO THE DIRECT AND CONTINUOUS POURED OF THE
MELTED METAL



(57) Abstract: Melting furnace for leagues of metal of second melting especially conformed with a special type of channel of connection, with a rotating joint (7) among the cupola(1) and the basin of wait of spherical form (8) and able to rotate, such to allow the poured direct and continuous way of the liquid metal, without giving place interruptions of the cycle of work, from the cupola to the basin of wait and from this to the ingot mould.

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Description

Melting furnace for metal leagues fit to the direct and continuous poured of the melted metal.

Technical field

The present invention regards an melting furnace for metal leagues of second melting with a special type of connection between the primary parts of the furnace system, the cupola and the basin of wait especially conformed and able to rotate, so that to realize a combined system of making without giving place interruptions of the cycle of work.

State of the technique

In the systems to traditional technology, three phases of making of the foundry cycle can be individualized tied to the three primary elements: the melting furnace, the channel or the channels of poured and the basin of wait.

The first phase is constituted by the loading, in the melting furnace or cupola, of the league scrap and its melting. During this phase it is necessary to furnish remarkable quantity of caloric energy fit to produce the necessary specific heat to the melting of the material and a further quantity of energy, latent heat, necessary to the maintenance of the liquid phase of the metal in the time that is completed the melting of the whole scrap charge present in the cupola. The second phase consists in the blowing out of the furnace and consequent partial cooling to allow the poured of the melted material, to means of special pouring channels, toward the basin of wait. The pouring channels, are realized generally with runs to open sky that behave a further cooling of the melted

metal. The third and last phase is constituted by the transformation of the material in league in the basin of wait with corrections and additions of metal as well as reinstatement of the caloric energy, constituent the specific and latent heat, necessary to make up for dissipated energy during the inevitable cooling that is had among the before and the second phase. The long times of melting and poured of this technique, they favor the absorption of remarkable quantity of gas of the melted material, much is that in the basin it is often had to also apply to a type of correction that foresee the addition in the bath, through injection of liquid nitrogen, to degasify the league so that to get ingots and pigs exempted by defects.

Purposes and aims of the invention

Purpose of the present invention is that to eliminate the inconveniences in the preceding technique realizing an melting furnace that with a special connection allows the poured direct and continuous way of the melted metal from the cupola to the basin of wait able to rotate, and from this last to the ingot mould, decreasing the energetic costs and times of management and employment of hand of work and, at the same time, also realizing good conditions in safety terms of the job because the employees are not to contact with the melted material since the making cycle happens, in practice, completely to the closed one.

The continuous making cycle avoids, therefore, the interruptions, for the blowing out and the cooling of the first part of the furnace with least supply, in the second part, of further caloric energy assuring, therefore, the saving of fuel, time and hand of work.

Description of the drawings and way of realizing the invention.

The fig. 1 shows in schematic way a lateral view in section of the furnace;
the fig. 2 shows in schematic way a view from the top and in section of the
5 furnace;
the fig. 3 shows in schematic way the rotating channel of connection.

In the actual form preferred of the present invention and with reference to the
attached figures is pointed out with (1) the cupola essentially of cubic form
with walls in material refractory (2) surrounded by a metal shirt (3), in which is
10 present on a side the burner (4), on another side the door of load (5) and on the
opposite side, centrally in low, an opening (6) from which the melted metal
escapes for reaching, through the channel of poured (7), the basin of wait of
spherical form (8) that is placed on a lower plan, in a pit (9), sustained by
elements of support (10). The channel of poured (7) realizes a special rotating
15 joint, between the cupola (1) and the basin of wait (8), constituted by two
hollow cylindrical bodies to circular section, adequately heat insulated (11)
and (12), fixed each for an extremity (13) and (14) respectively to the cupola
(1) and to the basin of wait (8) and the other free extremity of each (15) and
(16), coaxially inserted one in the other. Between the two cylindrical bodies
20 (11) and (12) there is an inter distance than no more than some centimeter in
mode that inside can rotate without causing friction in comparison to that
outside.

The basin of wait of spherical form (8) is constituted by two semispheres set
one on the other, with walls in refractory (17) and heat insulated (18)
25 surrounded by a metallic shirt (19) and positioned in a pit (9) sustained by

supports (10) in such way that his meridian circumference is practically to the same height of the channel of poured (7). In proximity of the meridian circumference a burner (20) is placed and the orifice of exit (21) of the liquid metal.

5 The metal scrap a melted time in the cupola, it comes out from the opening (6) and through the channel of poured (7) reaches the spherical basin of wait (8), here it suffers further treatments, and at the end when the wanted result is reached, through a motorized system the spherical basin of wait (8) is rotated around the axle I of that so much that the liquid metal come out from the
10 orifice of exit (21) to reach the ingot mould.

As can be clearly seen the invention fulfils its objectives completely .

In fact, in virtue of the thermodynamic and physical principles of the isotropy, the particular adopted geometric form (spherical body) of the basin of wait, it exalts and improves the whole procedure of the technological cycle of
15 production. Besides thanks to the particular connection realized between the cupola and the basin of wait of the furnace, (although separate, they result, in the operation, united to means of the rotating joint), it is gotten that the said constituent parts can work in contemporary realizing, so, a continuous melting system with notable saving of fuel, of time and hand of work; they are gotten,
20 therefore, economies with percentages also of the fifty percent in comparison to the standards of the systems of the preceding technique.

All the details can be substituted according to necessity by other elements with the same technical characteristics, essentially the dimensions and shapes can be varied according to the user's requirements.

Claims

1) Melting furnace for leagues of metal of second melting characterized by the fact that the channel of poured (7) of the liquid metal, from the cupola (1) to the basin of wait of spherical form (8), is constituted by two hollow cylindrical
5 bodies to circular section (11) and (12), adequately heat insulating, fixed each for an extremity (13) and (14) respectively to the cupola (1) and to the basin of wait (8) and the other free extremity of each (15) and (16) coaxially inserted one in the other in such way that, through a motorized system, the basin of wait (8) can rotate around the axle I, allowing the going out of the melted metal by
10 the orifice of exit (21) and the filling of the ingots mould.

2) Melting furnace for leagues of metal of second melting as to claim 1) characterized by the cupola (1) essentially of cubic form with walls in material refractory (2) surrounded by a metal shirt (3), in which is present on a side the burner (4), on another side the door of load (5), and on the opposite side,
15 centrally in low, an opening (6) from which the melted metal escapes for reaching, through the channel of poured (7), the basin of wait of spherical form (8).

3) Melting furnace for leagues of metal of second melting as to claim 1) characterized by the fact that the channel of poured (7) realizes a special
20 rotating joint between the cupola (1) and the basin of wait (8) and that between the two cylindrical bodies (11) and (12) component, there is an inter distance than no more than some centimeter in mode that inside can rotate without causing friction in comparison to that outside.

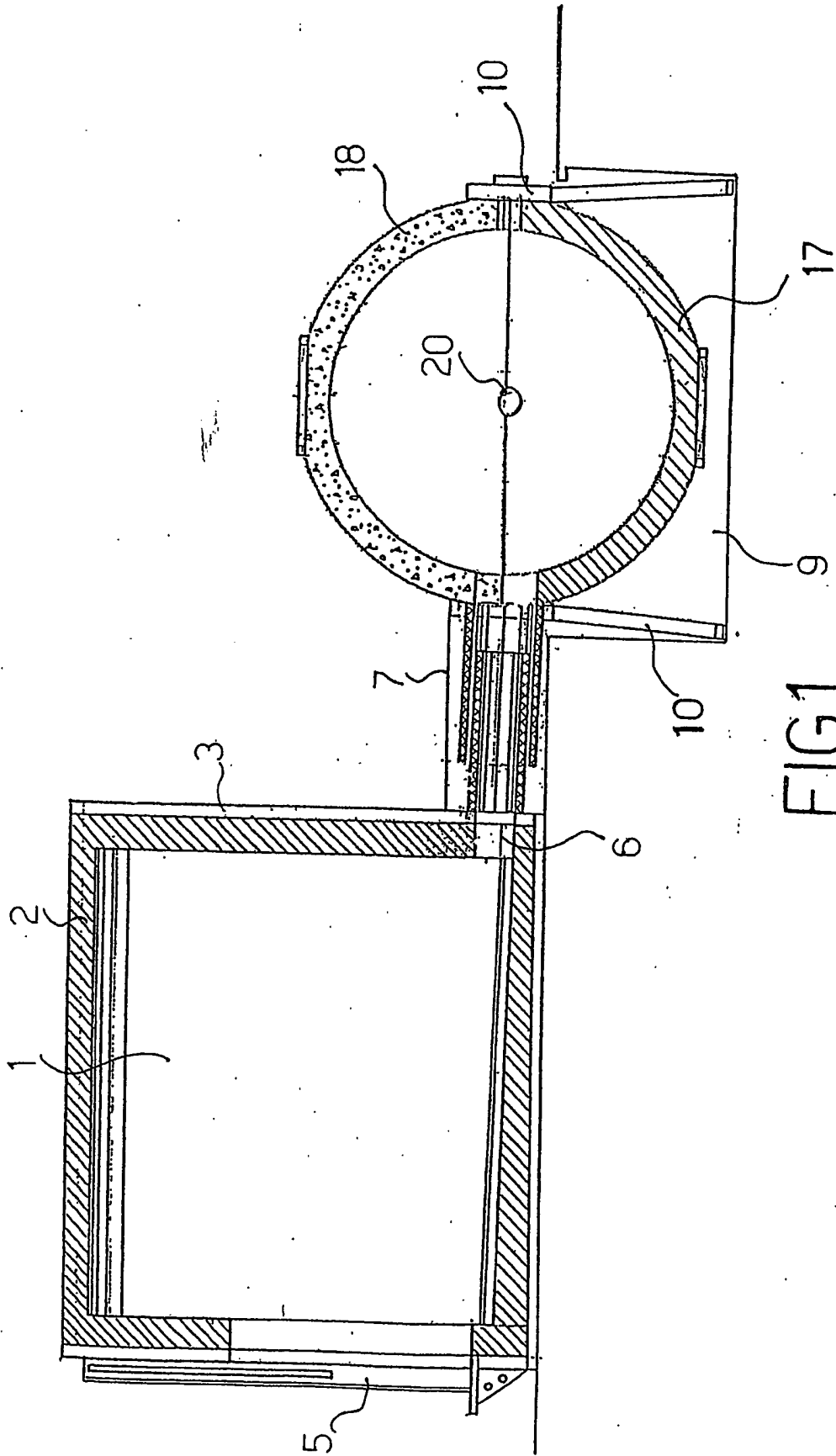
4) Melting furnace for leagues of metal of second melting as to claim 1)
25 characterized from the fact that the basin of wait of spherical form (8) is

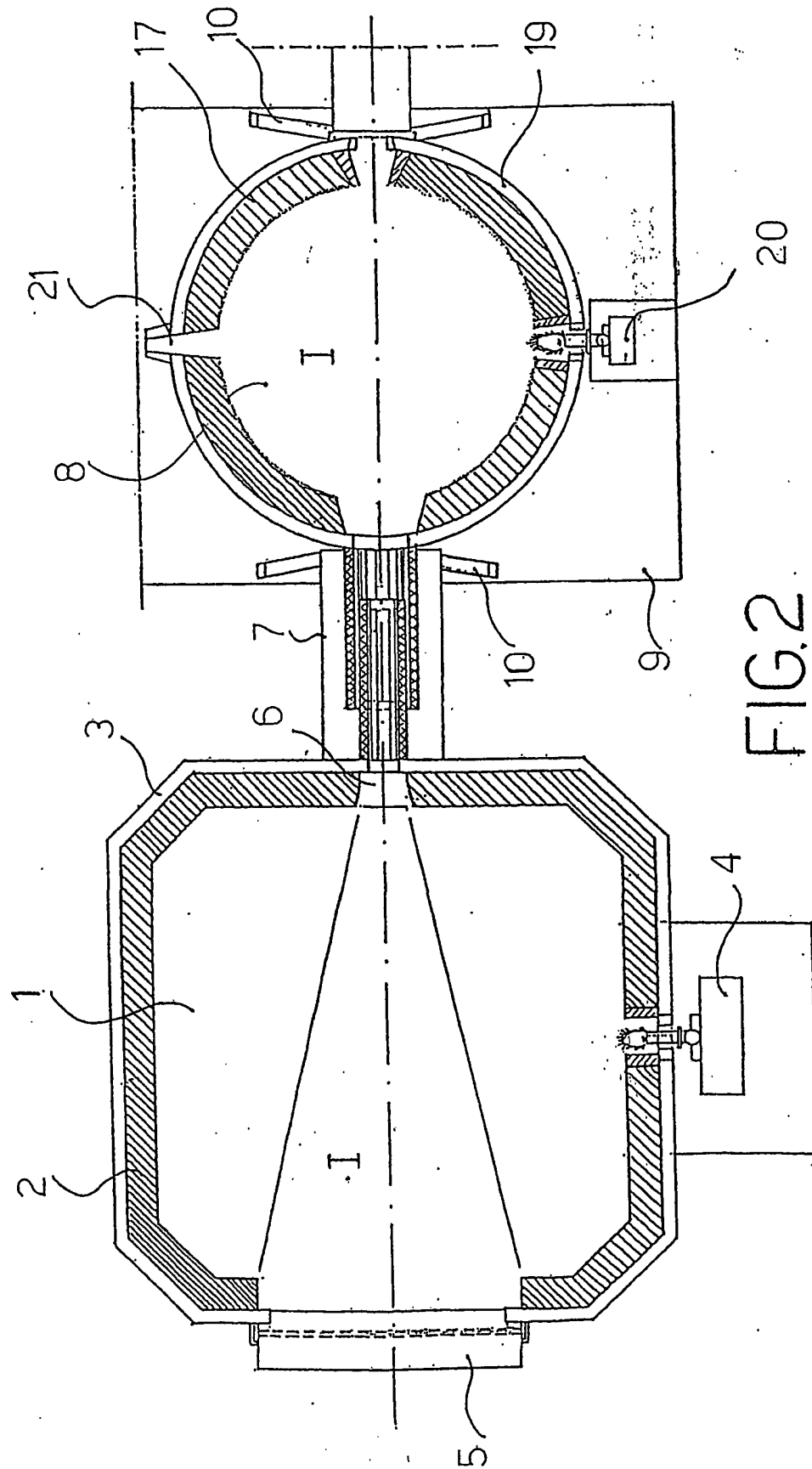
constituted by two hollow semispheres set one on the other, with walls in refractory (17) and heat insulating (18) surrounded by a metallic shirt (19) and is partially positioned in a pit (9) sustained by supports (10) in such way that his meridian circumference is practically to the same height of the channel of poured (7).

5) Melting furnace for leagues of metal of second melting as to claim 1) and 4) characterized by the fact that in proximity of the meridian circumference of the spherical basin of wait (8) is placed a burner (20) and the orifice of exit (21) of the liquid metal

6) Melting furnace for leagues of metal of second melting characterized by the fact that the adoption of a channel of connection with a rotating joint (7), between the cupola (1) and the basin of wait of spherical form (8) and able to ruotate around the axle I, allow the poured direct and continuous way of the liquid metal, without giving place interruptions of the cycle of work, from the cupola to the basin of wait and from this, through the orifice of exit (21), to the ingot mould.

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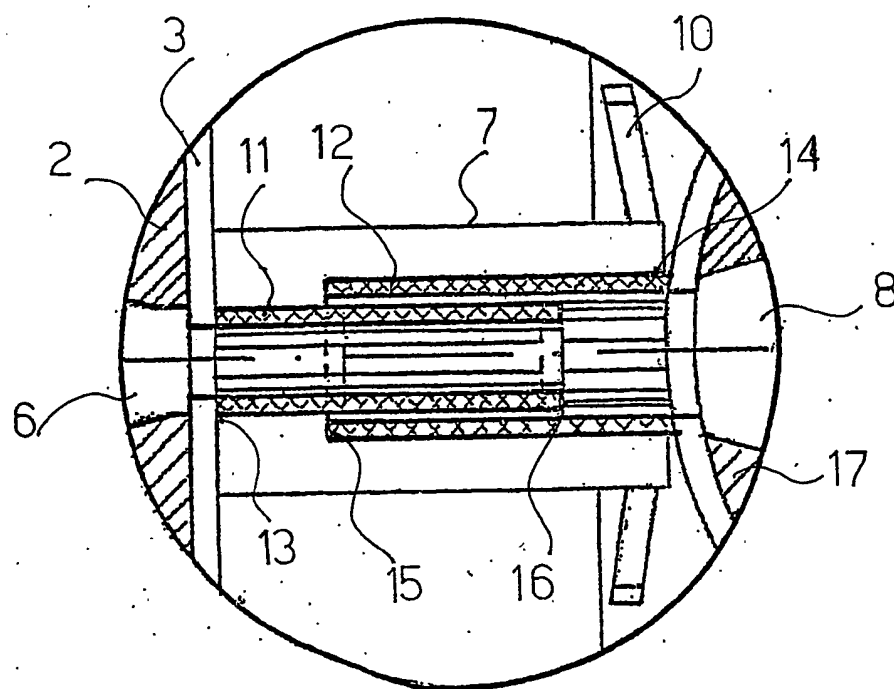


FIG.3